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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/829,574	04/22/2004	Mani Sundaram	20030126-CIP	6714
42716	7590	04/03/2006		EXAMINER
MAINE & ASMUS P. O. BOX 3445 NASHUA, NH 03061				JACKSON JR, JEROME
			ART UNIT	PAPER NUMBER
				2815

DATE MAILED: 04/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/829,574	SUNDARAM ET AL. <i>AM</i>
	Examiner	Art Unit
	Jerome Jackson Jr.	2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 23 January 2006.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-20 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1/23/06.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Kuan, of record.

The previous rejection still applies. The new limitations reciting a unit cell comprising “two quantum wells coupled by a barrier” do not structurally distinguish over the suggestions and teachings of the applied art because figure 7 of Kuan shows precisely this structure. Furthermore the coupled superlattice quantum well structures in figures 10-12 of Kuan also broadly meet the claimed “coupled well” structure. Each superlattice unit of Kuan defines a “quantum well” and the two different superlattice “quantum well” structures are coupled by a thick barrier layer to form an “asymmetric quantum well structure”. Applicant’s claims are broad enough to read on the applied art.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Almogy, of record.

The previous rejection still applies.

Applicant’s arguments filed 1/23/06 have been fully considered but they are not persuasive. Applicant argues there is no motivation to combine the references. This is not persuasive because the applied art all pertain to quantum well detectors and particularly suggest the claimed structure. Martin with Kuan suggests asymmetric well structure as stated in the rejection. The motivation to “combine” is for the advantages of “photon in a box” and grating structure, as stated previously. These additional structures are advantageous for increasing the efficiency of detection and are considered to be

well known and obvious. Applicant alleges sharp contrast of his “asymmetric” quantum well structure with Kuan’s asymmetric structure. This argument is not persuasive as stated above because Kuan specifically shows simple asymmetric well structure in figures 6 and 7 and shows superlattice asymmetric quantum well structure in figures 10-12. Contrary to applicant’s allegations, applicant’s claims reciting different sized wells coupled by a barrier do not structurally distinguish over figure 7 of Kuan or figures 10-12. There is no particularly claimed barrier structure to unequivocally distinguish applicant’s claims over Kuan with Martin. The recitation “coupled” and “barrier” clearly do not structurally distinguish the claims over the applied art because Kuan shows wells “coupled” by a barrier to detect at more than one wavelength. The claims are broad and undistinguishing over the applied art. Arguments regarding the superlattice “coupled” wells of Kuan are also unpersuasive as the separate superlattices define a “quantum well” or “quantum wells” coupled by a barrier to another “quantum well” or “quantum wells” to detect different wavelengths of light. The claims do not avoid a single or plural designation of the coupled wells of Kuan with Martin.

Regarding Almogy, note again that photon in a box and grating structure is considered well known from Martin and obvious structure to “combine” with quantum well photodetector design as Almogy for the advantages inherent in such design as better efficiency in coupling light to the detectors. Almogy clearly shows asymmetric quantum well design and is properly suggestive of applicant’s claimed structure with the additions of Martin. Regarding the limitation “well spike” and the functional language, there is a well spike in Almogy and any functional language as “adjusts” does not

structurally distinguish the claims over the applied art because the well spike along with the other well structure determines the ground state of the well. The claim is still broad and structurally undistinguishing over the applied art as there is no particular language in the claim as alleged in "host crystal" or any other particular distinguishing structural feature over the doping spike of Almogy. The term "spike" is broad and structurally undistinguishing over the applied art.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

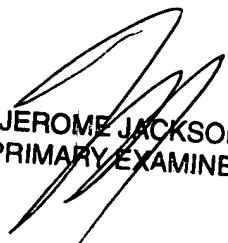
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerome Jackson Jr. whose telephone number is 571-272-1730. The examiner can normally be reached on M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jj



JEROME JACKSON  
PRIMARY EXAMINER